WE CLAIM

1. A method of controlling a hydraulic mount of a vehicle engine comprising:

calibrating at least one tunable parameter of a control system of the mount based on an engine bounce resonant frequency;

sensing a relative acceleration across the mount;

generating a control signal responsive to the relative acceleration based on the at least one tunable parameter; and

controlling the flow of MR mount fluid in the mount responsive to the control signal such that maximum vibration damping occurs at a predetermined band of frequencies.

2. The method of claim 1 wherein the predetermined band of frequencies occurs at and around the resonance bounce frequency of the engine.

3. The method of claim 2 wherein calibrating at least one tunable parameter comprises tuning an objective function obtained by a sensitivity function.

4. The method of claim 3 wherein calibrating at least one tunable parameter comprises tuning a weighting function.

5. The method of claim 4 wherein the weighting function is limited to the resonance bounce frequency.

6. The method of claim 5 wherein calibrating at least one tunable parameter comprises tuning an associated scalable factor.

7. The method of claim 6 wherein the associated scalable factor is used to increase and decrease the magnitude of the weighting function.

8. A system for controlling a hydraulic vibration damping engine mount for a vehicle comprising:

at least one mount, each mount defining a fluid chamber;

means for sensing relative acceleration across each mount;

a tunable control device operably connected to the sensing means for generating a control signal based on the sensed relative acceleration and maximized at a predetermined band of frequencies; and

a coil member positioned adjacent to the mount, the coil member operably connected to the control device for generating a magnetic field in the fluid chamber based on the control signal.

9. The system of claim 8 wherein the sensing means is a pair of accelerometers positioned such that a first accelerometer is placed on an engine of the vehicle and a second accelerometer is placed on a frame member of the vehicle.

10. The system of claim 9 wherein the at least one mount includes a first and a second mount.

11. The system of claim 10 wherein the first and second mounts are placed between the engine and the frame in a spaced apart configuration.

12. The system of claim 8 wherein the mount includes a magnetorheological mount fluid.

13. The system of claim 12 wherein the coil is positioned to control the flow of magnetorheological fluid between upper and lower chambers of each mount.

14. The system of claim 13 wherein the coil includes an annular coil positioned adjacent at least one passageway through a plate, the plate being positioned between the upper and lower chambers.

15. The system of claim 14 wherein the coil is adapted to impart an increased shear resistance to the magnetorheological fluid when a current is passed through the coil.

16. A system for controlling a hydraulic mount of a vehicle engine comprising:

means for modifying at least one tunable parameter of a control system of the mount based on an engine bounce resonant frequency;

means sensing a relative acceleration across the mount;

means for generating a control signal responsive to the relative acceleration based on the at least one tunable parameter; and

means for controlling the flow of MR fluid in the mount responsive to the control signal such that maximum vibration damping occurs at a predetermined band of frequencies.

17. The system of claim 16 wherein the predetermined band of frequencies occurs at and around the resonance bounce frequency of the engine.

18. The system of claim 17 wherein the means for tuning at least one tunable parameter comprises an objective function obtained by a sensitivity function.

19. The system of claim 18 wherein the means for tuning at least one tunable parameter comprises a weighting function.

20. The system of claim 19 wherein the weighting function is based on the resonance bounce frequency.

21. The system of claim 20 wherein the means for tuning at least one tunable parameter comprises an associated scalable factor.

22. The system of claim 21 where the associated scalable factor is used to increase and decrease the magnitude of the weighting function.

23. A control system for a hydraulic mount for a vehicle comprising:

means for sensing a relative acceleration across the mount;

means for generating a control signal corresponding to the relative acceleration;

means for controlling the flow of MR fluid in the mount responsive to the control signal;

means for tuning the control system such that maximum vibration damping occurs at and around the engine resonance bounce frequency.